

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

Item No: 11 (Rev. 1)
Agenda ID: 20352
RESOLUTION G-3586
March 17, 2022

R E S O L U T I O N

Resolution G-3586. Southern California Gas Company requests approval to record Research, Development, and Demonstration (RD&D) expenses to its Research, Development, and Demonstration Expense Account.

PROPOSED OUTCOME:

- Approves the Southern California Gas Company (SoCalGas) to record up to \$16.494 million in Research, Development, and Demonstration (RD&D) expenses as outlined in its 2022 RD&D Program Research Plan to its RD&D Expense Account, pursuant to Decision (D.) 19-09-051. Any adjustments to the Program budget necessitated for the prior year (over or under) shall be carried over to the following year, with any unspent RD&D funds remaining at the end of the General Rate Case (GRC) cycle returned in rates to customers as part of the next SoCalGas GRC.

SAFETY CONSIDERATIONS:

- This resolution approves and prioritizes \$712,541 for Environmental & Safety research as a Gas Operations sub-program, representing 20 percent of total spending on Gas Operations Research and Development in the 2022 Plan. This sub-program includes system emissions, environmental projects, and safety projects as key research areas.
- Safety is listed as a benefit for nine of 17 sub-programs, including the Environmental & Safety research sub-program, representing 50 percent of total investment in 2022. SoCalGas

articulates advancing safety as part of its overall program goals. The sub-programs Renewable Gas Production, Refueling Stations, Onboard Storage, Integration and Controls, and Advanced Innovation list safety as a benefit.

ESTIMATED COST:

- Approves SoCalGas to record up to \$16.494 million to its RD&D Expense Account as authorized in D.19-09-051. Any adjustments to the Program budget necessitated for the prior year (over or under) shall be carried over to the following year, with any unspent RD&D funds remaining at the end of the GRC cycle returned in rates to customers as part of the next SoCalGas GRC.

By Advice Letter 5824-G, Filed on June 21, 2021.

SUMMARY

This Resolution approves the Southern California Gas Company (SoCalGas) to record RD&D expenses as detailed in its 2022 RD&D Program Research Plan to its RD&D Expense Account. The California Public Utilities Commission (CPUC) approves the SoCalGas annual RD&D budget of \$16.494 million for 2022 and its 10 percent administration budget of \$1.6494 million. The Resolution modifies previous Resolution G-3573 and allows recovery for funding of the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project to be recorded to the RD&D expense account. The Commission, however, does not modify Resolution G-3573 to allow recovery for the Southwest Research Institute (SWRI) Development of Pent-Roof Natural Gas Engine in an Optimized Hybrid Vehicle System project. The Resolution requires SoCalGas to file a [Tier 2 Advice Letter Compliance Filing](#) within 960 days ~~as part of the docket for A.17-10-008~~ providing Research Plan information detailed in the Ordering Paragraphs.

BACKGROUND

California Public Utilities Code Section 740.1 provides for the CPUC to authorize utility RD&D activities that benefit ratepayers through improved reliability, safety, environmental benefits, or operational efficiencies. Such authorization is granted provided that SoCalGas achieving those benefits is reasonably probable and the focus is not unnecessarily duplicative of efforts by other research organizations. Section 740.1 additionally requires that each project supports at least one objective related to environmental improvement; public and employee safety; conservation through efficient resource use; conservation through reducing or shifting system load; development of new resources and processes, particularly renewable resources and processes, that further supply technologies; improvement of operating efficiency or reliability; or the reduction of operating costs.

In 2016, D.16-06-054 approved SoCalGas's RD&D Program for an average annual funding level of \$12.282 million for 2016 to 2018.

In 2017, SoCalGas submitted its GRC Application (A.)17-10-008 and requested to continue its RD&D program for the 2019 GRC cycle for 2019 to 2023. SoCalGas forecasted an average annual funding level of \$14.329 million and proposed to continue to record RD&D expenses in a one-way balancing account. D.19-09-051 authorized a three-year GRC cycle of funding for SoCalGas, including the 2021 RD&D program budget. In addition, the decision ordered SoCalGas to take additional steps beginning in 2020 to improve program administration and transparency, including hosting a public workshop under the supervision of Energy Division. The decision also directed SoCalGas to file a Tier 3 Advice Letter with their Research Plan for the upcoming year, including: (1) Detailed budgets broken down by research sub-program areas; (2) Explanation of how the projects improve reliability, safety, environmental benefits, or operational efficiencies; and (3) Discussion of how SoCalGas incorporated feedback from workshop stakeholders and CPUC Staff.

On June 21, 2021, SoCalGas submitted its 2022 RD&D Program Research Plan in

Advice Letter 5824 requesting to recover costs for 17 research sub-programs in the general fields of low carbon resources, gas operations, clean transportation, clean generation, and customer end-use appliances. In its Advice Letter submitting the Plan, SoCalGas escalated the total value of the RD&D budget approved in its GRC decision to 2022 dollars, from \$16.181 million to \$16.494 million, using a cost escalation method approved in D.19-09-051 to reflect external inflation to labor and non-labor and capital costs. SoCalGas also requested to modify Resolution G-3573 to allow for cost recovery in the RD&D Expense Account for funding of the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project and the Southwest Research Institute (SWRI) Development of Pent-Roof Natural Gas Engine in an Optimized Hybrid Vehicle System project.

NOTICE

Notice of AL 5824 was made by publication in the Commission's Daily Calendar. SoCalGas states that a copy of the Advice Letter was mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS

Advice Letter 5824 was not protested.

DISCUSSION

The CPUC has reviewed and evaluated SoCalGas's 2021 RD&D Program Research Plan based on the following:

- Consistency with D.19-09-051 Annual Workshop and Report Requirements
- Consistency with D.19-09-051 Advice Letter Requirements
- Consistency Resolution G-3573 Requirements
- Consideration of equity and disadvantaged communities
- Alignment of SoCalGas's RD&D Plan with California's decarbonization goals and requirements

Consistency with D.19-09-051 Annual Workshop and Report Requirements

Ordering Paragraph 30 of D.19-09-051 ordered SoCalGas to host an annual workshop during the second quarters of 2020 and 2021 under the supervision of the Commission's Energy Division. D.19-09-051 requires the SoCalGas to present at its workshop the results of the previous year's Natural Gas RD&D program and obtain input from stakeholders to inform SoCalGas's 2022 RD&D investment. The decision also requires SoCalGas to submit an Annual Report to Energy Division describing: the previous year's RD&D program, including a summary of ongoing and completed projects; program funds expended; funding recipients; leveraged funding; an explanation of processes used for selecting RD&D project areas; and the structure of the RD&D portfolio. Finally, the decision directed SoCalGas to engage stakeholders and provide Energy Division with workshop materials and documentation of stakeholders consulted one week prior to the workshop.

On April 7, 2021, SoCalGas submitted its 2020 Annual Report to CPUC Energy Division documenting program results from the previous year.¹ The Report was also later made available on SoCalGas's R&D website. As directed in D.19-09-051, SoCalGas's 2020 Report includes summaries of ongoing and completed projects, funds expended, and funding recipients in the "2020 Summary of Ongoing and Completed Projects" section. The 2020 Report also lists co-funders and total co-funding dollars. The 2020 Report's "Policy Drivers" section states that a combination of regulatory and policy drivers, as well as corporate and policy goals, were considered. A brief subsection on "Program Structure" identifies each broad area of funding and explains the structure of the RD&D portfolio. However, the Report does not explain the process for selecting RD&D project areas as required by D.19-09-051.

¹ SoCalGas (2021). Transitions: Research, Development, and Demonstration Program - 2020 Annual Report. Available at: <https://www.socalgas.com/sites/default/files/2021-06/2020-SoCalGas-RDD-Annual-Report.pdf>

On April 14, 2021, SoCalGas hosted a public workshop attended by 165 stakeholders from 69 organizations to discuss the company's 2022 Research Plan. During the day-long workshop, SoCalGas presented the results of the previous year's program and obtained input on its research initiatives and funding allocations for 2022. SoCalGas provided materials to Energy Division and stakeholders prior to the workshop, including the workshop agenda, draft presentation, and a draft of its 2020 Natural Gas RD&D Annual Report. SoCalGas noticed the meeting on April 13, 2021, to the service list for A.17-10-008, and other stakeholders.

Consistent with D.19-09-051, SoCalGas included documentation of stakeholder engagement in its 2022 Research Plan. SoCalGas's Plan lists the organizations represented at the workshop, the workshop agenda, and the consulting group that hosted the workshop.² The Research Plan states that the stakeholder outreach enabled SoCalGas to identify and close knowledge and research gaps, avoid duplication of previous and ongoing research, and reduce technology and commercialization risk to achieve the RD&D Program goals.³

SoCalGas consulted with and followed input from Energy Division staff in conducting its workshop and developing its 2020 Annual Report. SoCalGas did not explain its portfolio selection process in its Annual Report. We expect SoCalGas to include such an explanation in future Annual Reports as well as in its Research Plans. Nonetheless we determine that SoCalGas meets the workshop and Annual Report requirements of D.19-09-051.

Consistency with D.19-09-051 Advice Letter Requirements

D.19-09-051 requires that after considering stakeholder comments during the

² Recorded in the Appendices of the 2022 Research Plan. Appendix A: Stakeholder Input, Appendix B: Stakeholder Workshop Questions & Comments, and Appendix C: Post-Workshop Stakeholder Input.

³ SoCalGas (2021). 2022 SoCalGas Research, Development, and Demonstration Program at 18.

workshop, SoCalGas shall file a Tier 3 Advice Letter with its Research Plan for the following calendar year. The Commission directed that SoCalGas's RD&D Research Plan should (1) provide detailed budgets broken down by research sub-program area; (2) explain how the projects help improve reliability, safety, environmental benefits, or operational efficiencies; and (3) discuss how SoCalGas incorporated feedback from workshop stakeholders and Commission staff. The decision directs that SoCalGas shall not record any RD&D project expenses for new projects in the one-way balancing account until the Advice Letter is approved. Expenses for multi-year projects approved and contracted prior to the Resolution may be recorded in the one-way balancing account.⁴

Detailed budgets broken down by research sub-program-~~area~~

The SoCalGas 2022 Research Plan includes detailed budgets and a breakdown of research by 17 sub-program-~~areas~~ for six programs (including Program Administration). Section 5.1 of the Plan renames and consolidates sub-programs. SoCalGas states that these changes reflect better alignment with industry categorization best practices and shifts in research priorities in response to emerging trends and technologies. The program and sub-program budget categories, along with funding amounts, are included in Appendix A.

SoCalGas's 2022 Research Plan contains less budget detail than its 2021 Research Plan. For example, the 2022 Program Administration budget is not broken down into budget items while the 2021 Research Plan divided the administration budget into seven spending categories. Research-~~area~~ sub-programs in the 2022 Research Plan also are not broken down by committed funds and funds for projects under development for subsequent years, whereas the 2021 Research Plan did provide this information.

We find that such budget detail regarding administration costs as well as

⁴ D.19-09-051 at 379.

committed funds provides transparency of ratepayer investment and is necessary for Energy Division staff to perform analysis of proposed Research Plans. We, therefore, require that SoCalGas file a Tier 2 Advice Letter Compliance Filing within 60 days ~~as part of the docket for A.17-10-008~~ providing administrative budget detail at the same level of detail it provided in its 2021 Research Plan, as part of four categories of information described in the Ordering Paragraphs. For all future Research Plans, SoCalGas should describe administration cost detail using the allowable administration cost categories as defined for the Electric Program Investment Charge (EPIC) program to be developed in the process launched by D.21-11-028.⁵ We also require that SoCalGas's future Research Plans include details about project committed funds and funds for projects under development for subsequent years of RD&D investment.

On August 18, 2021, Energy Division staff issued a data request to SoCalGas requesting it provide information on 16 project-level data fields for its 2022 RD&D Plan. Energy Division also requested information about SoCalGas's strategic planning process and how individual research programs supplemented existing CEC research programs. On August 31, 2021, SoCalGas in response submitted a spreadsheet with project-level detail as well as additional project and research sub-program information. The response also detailed how SoCalGas's projects align with CEC research programs.

We find that SoCalGas provided a sufficiently detailed budget by sub-program ~~area~~ in its Research Plan and data request response to justify its 2022 investments. We also find that evaluating SoCalGas's Research Plans at the project level provides necessary insight into both the substance and timing of SoCalGas's research activities to support the CPUC's analysis of how natural gas research projects complement each other and use matching funds.

⁵ D.21-11-028 requires EPIC administrators to organize a workshop on allowable administrative costs by January 17, 2022. Within 10 days after the workshop, PG&E is required to file a Tier 2 Advice Letter proposing a list of eligible administrative budget line items with clear associated definitions.

We require that for all future requests for which SoCalGas is seeking to invest and recover funding from ratepayers for natural gas RD&D that SoCalGas provide that same level of project level detail in its Research Plans advice letters with the following information:

- a. Project ~~ID~~ title
- b. Unique number identifier for project
- c. Program~~Research area~~ and sub-~~area~~program
- d. Project start date
- e. Project end date or anticipated end date
- f. SoCalGas budget for project
- g. Total cost contracted
- h. Amount already spent
- i. Amount still to be spent
- j. Co-funding partners
- k. Monetary contribution of each co-funding partner
- l. Project benefits of research
- m. Research area~~Major category focus~~
- n. Technology readiness level
- o. Next steps at end of project
- p. One-paragraph narrative description

We also expect that future SoCalGas Research Plans detail how their projects complement and coordinate with similar research projects conducted by the CEC and other investor-owned utilities.

Resolution G-3573 recommended that SoCalGas include a chart in future Research Plans showing the dues that SoCalGas pays to each research consortium and the allocation of those dues to various research projects overseen by each consortium. SoCalGas responded in its 2022 Research Plan by including a chart showing the dues paid to each research consortium. However, the Plan did not provide information on the allocation of SoCalGas research funds to consortium projects. We direct SoCalGas to include in its Tier 2 Advice Letter

~~Compliance Filing~~ information about such research funding allocations by consortium, as well as by total consortium-related project costs, and to include this information in all future Research Plans.

SoCalGas's request to utilize 10 percent of its total proposed RD&D budget for administrative expenses (or \$1.6494 million) is a reasonable use of ratepayer funds based on the 10 percent administrative expense cost cap historically used by the EPIC program in alignment with similar administrative expense caps in the Self Generation Incentive Program, the California Solar Initiative, and IOU energy efficiency programs.⁶ We, therefore, approve the use of \$1.6494 million, or 10 percent of the total funding amount of \$16.494 million for program administration of the projects approved in SoCalGas's 2022 Research Plan. Again, we require that SoCalGas include~~ing~~ in its Tier 2 Advice Letter ~~Compliance Filing~~ the administrative budget breakdown used in its 2021 Research Plan and information detailing how research funding is allocated by research consortium and total consortium-related project costs. For all future Research Plans, SoCalGas should include more detail about administration budgets to align with allowable EPIC administration cost categories ~~ories~~ ~~dede~~veloped in the process launched by D. 21-11-028, as described above.

Explanation of how the projects improve reliability, safety, environmental benefits, or operational efficiencies

Each sub-program throughout SoCalGas's 2022 Research Plan includes a breakdown of sub-program benefits for reliability, safety, environmental benefits, operational efficiencies, and/or improved affordability. The sub-program breakdown for each benefit both names the benefit category and explains in general terms how the sub-program addresses the goal, for example by replacing fossil fuel-sourced energy and reducing greenhouse gas emissions in the environmental benefits category. The ~~deseri~~descriptions do not include quantitative estimates of potential benefits, numeric targets, or a specified

⁶ D.12-50-037 at 67.

numeric range of potential benefits. Resolution G-3573 approving SoCalGas's 2021 Research Plan directed that SoCalGas should in ~~its future~~ Research Plans include such quantitative measures of program benefits.⁷ Without such specifics, it is difficult to determine what constitutes success in the sub-program except at a general level and how much of an improvement in reliability or safety or any other benefit would meet the sub-program's objective.

SoCalGas sufficiently describes in its 2022 Research Plan the general intention of each sub-program and how the research could improve reliability, safety, environmental benefits, or operational efficiencies. However, SoCalGas should include in its Tier 2 Advice Letter Compliance Filing a proposed framework for reporting the intended benefits or a range of potential benefits created by sub-programs and how SoCalGas will use quantitative measures to assess progress made toward the listed benefits for each sub-program area. ~~Otherwise, SoCalGas should explain in its Compliance Filing Tier 2 Advice Letter why it cannot provide this information.~~ Further, SoCalGas shall provide quantitative metrics in its future Research Plans to be guided by the reporting framework developed jointly by SoCalGas and Energy Division staff and informed in part by the outcome of the EPIC proceeding's benefit-cost methodology.⁸

Discussion of how SoCalGas incorporated feedback from workshop stakeholders and CPUC Staff

SoCalGas's April 14, 2021, stakeholder workshop was attended by 165 stakeholders from at least 69 government agencies, universities, community groups, and private companies. SoCalGas states that it also conducted interviews with more than 50 people from 20 organizations prior to the workshop. SoCalGas

⁷ Resolution G-3573 at 6-7.

⁸ D.21-11-028 requires EPIC administrators to develop a single, unified benefits analysis process to enable evaluation of the benefits of all EPIC projects on an equal basis. The process may be informed by other methodologies for use in EPIC or other similar R&D programs. The resulting benefits analysis process should be adopted by SoCalGas in future Research Plans to quantify project benefits.

received questions from 22 stakeholders during the workshop representing public agencies, laboratories, gas industry associations, and private companies and received written comments after the workshop from 10 people representing a similar range of organizations.

SoCalGas reports that via its outreach conducted throughout this year leading up to the submittal of its 2022 Research Plan, its RD&D staff identified five key themes as industry needs: 1) support for exploring the decarbonization of the pipeline through hydrogen; 2) the need for greater international collaboration by SoCalGas in RD&D; 3) more communication needed about SoCalGas RD&D research program and its projects; 4) a desire for more RD&D work around heat pump water heaters; and 5) more research around fuel cells and combined heat and power (CHP). SoCalGas states its 2022 Research Plan addresses those themes with increased research in those subject areas and with more outreach activities.

The research areas described in the Research Plan include key theme subject areas SoCalGas reported were identified by stakeholders. Those research areas include renewable hydrogen production, hydrogen injection into pipelines, commercialization of small-scale solid oxide fuel cells, low-emission combined heat and power and backup generation, and gas heat pump water heaters. The Plan also describes SoCalGas staff leveraging the national and international experience of other utilities through participation in industry research consortia such as the Pipeline Research Council International. Finally, the Plan lists 20 organizations interviewed as part of stakeholder outreach, double the number of organizations interviewed for SoCalGas's 2021 Research Plan. The 2022 Plan also lists two universities in SoCalGas service territory – California State University, Los Angeles and University of California, Riverside – among stakeholder organizations interviewed prior to the spring 2021 stakeholder workshop.

In addition to the above themes identified by SoCalGas, written stakeholder comments expressed a range of additional concerns not addressed in SoCalGas's

Research Plan.⁹ Those concerns included questions about the amount of biogas SoCalGas intends to supply to core customers, costs and safety concerns related to green hydrogen, how SoCalGas identifies the technology readiness level of projects, and the use of renewable natural gas in methanation and steam methane reformation processes. In future Research Plans, SoCalGas is required to explain why it didn't include specific research areas or proposals offered by stakeholders before, during, and after the annual workshop.

Based on workshop participation and comments received before and after the workshop, SoCalGas has adequately sought stakeholder input and incorporated feedback in its 2021 Research Plan. Moving forward, SoCalGas should include more detail about how it considered whether to adopt or not adopt all research ideas proposed by stakeholders.

Consideration of equity and disadvantaged communities

Given the CPUC's increasing focus on equity as described in SB 350¹⁰, this Research Plan has also been reviewed for its consideration of impacts on disadvantaged and low-income communities.

SoCalGas addresses the following equity-related components in its 2022 Research Plan:

- SoCalGas added a section in the 2022 Plan describing specific actions the utility has taken to engage diverse stakeholders in RD&D planning and execution, including preparing educational materials about the RD&D program for environmental and social justice (ESJ) community

⁹ Stakeholder comments were received as public workshop questions and comments and post-workshop stakeholder input included in Appendices A, B, and C of SoCalGas's Advice Letter.

¹⁰ SB 350 Article 17 SEC. 25 Section 400 (d), SB350 Article 17 SEC. 27 Section 454.52 (H), SB350 Article 17 SEC. 28 454.55 (a) (1) and (2), SB 350 Article 17 SEC. 31 Section 740.8 (b) (5)

members. In 2021, SoCalGas identified approximately 20 Community-Based Organizations (CBO) for targeted presentations of its 2022 Research Plan and completed three community engagement sessions. Several comments received during the annual workshop asked how SoCalGas planned to engage with more diverse stakeholders in its RD&D work.

- The 2022 Plan identifies the CPUC's ESJ Plan as a key consideration for project selection including using ESJ Action Plan elements among policy and regulatory drivers and in project selection criteria for the renewable gas production and the carbon, capture, and utilization research areas.
- The Research Plan includes equity considerations among its seven criteria for project selection. According to the 2022 Plan, SoCalGas poses the following equity-themed questions among project selection criteria: Whether the proposed technology directly addresses the specific needs of a disadvantaged community (DAC) or a low-income community (LIC), whether the project is sited near a DAC or LIC, whether the project includes engagement by a CBO or Diverse Business Enterprise (DBE), and whether the Principal Investigator is a member of an underrepresented population. In the Plan those considerations appear in only two research sub-program descriptions with sufficient specificity. The carbon capture, utilization, and sequestration sub-program notes that carbon capture technology research can benefit ESJ communities because those technologies are generally deployed near industrial facilities that are located near ESJ communities and can improve air quality there. Similarly, the industrial process equipment sub-program states that low-income and disadvantaged communities generally live near industrial facilities so would benefit from the research. The equity considerations sections of other research areas, however, describe broader equity impacts such as building decarbonization technologies that improve the lives of all people, including ESJ communities.

- The Plan outlines how SoCalGas incorporates equity in the RD&D program to achieve five equity-related goals outlined in the 2022 Research Plan. The goals are: Building long-term relationships with key representatives of low-income and disadvantaged communities; sharing RD&D educational materials with disadvantaged and low-income communities; working with SoCalGas's Public Affairs team to identify and connect with contacts in those communities and seek input on potential research needs; connecting with regional California universities and identifying researchers working with low-income and disadvantaged communities; leveraging existing relationships with state agencies to identify community contacts; and establishing metrics and goals to measure progress in working with communities.
- The Plan references the completion of a formal SoCalGas RD&D Program Equity Engagement Plan by the end of 2021 that will include the following anticipated activities: Require all RD&D program funding recipients to include an Equity Engagement Survey; work with other units within SoCalGas to identify best practices and leverage established programs to improve engagement between the RD&D program and the community; establish equity metrics to measure benefits to ESJ communities and mechanisms for tracking them; and create one or more project spotlight featuring an RD&D Program project that benefits an ESJ community or another underrepresented group or has the potential to benefit such groups when commercialized. This Plan is scheduled to be released about two years into SoCalGas's current GRC cycle, when about half of the 2022 Plan's funding will have already been allocated to specific projects. Such an engagement plan would better serve ratepayers and communities if it was implemented at the start of the funding cycle.
- The Equity section states that instead of focusing on metrics such as job creation and other economic development metrics, RD&D programs should provide real value through impacts such as spurring

productivity, invention, and patenting activity. The Plan also proposes the use of what it calls long-term metrics to gauge program impacts such as: Reducing greenhouse gas and nitrogen oxide emissions in ESJ communities, reducing the cost of energy in ESJ communities, and increasing the reliability of energy delivered in ESJ communities. Despite proposing using such metrics, the 2022 Plan does not consistently provide quantitative metrics measuring greenhouse gas and nitrogen oxide emissions and energy cost and reliability in its research area and sub-~~program~~area descriptions. The Plan also does not provide quantitative measures of the community impacts of past Research Plan sub-~~program~~areas listing job development and other economic development metrics.

- In its list of stakeholder groups participating in the 2021 Workshop, the Plan names seven organizations specifically dedicated to community building: Community Services Employment Training, Latino Chamber of Commerce of Compton, Los Angeles Neighborhood Council Coalition, National Association for the Advancement of Colored People Riverside 1059, Northridge East Neighborhood Council, Proteus Inc., and the Society of Professional Hispanic Engineers. The Plan does not list any ~~organizations dedicated to community building~~CBOs among the stakeholder organizations SoCalGas interviewed in early 2021. The Plan also does not describe specifically how input from those organizations was incorporated into research areas and sub-~~program~~areas.

We find that SoCalGas's 2022 Research Plan appropriately incorporates equity in its criteria and research descriptions. SoCalGas demonstrates its commitment to incorporating equity considerations in its RD&D planning by including ESJ organizations in its stakeholder outreach and developing a Program Equity Engagement Plan targeted to RD&D.

We require that SoCalGas describe in its 2023 Research Plan specific progress it has made in implementing its RD&D Program Equity Engagement Plan in

relation to its engagement plan's four anticipated activities described in the 2022 Research Plan. This RD&D Program Equity Engagement Plan should be posted publicly, shared with Energy Division staff, and served on the relevant services lists or successor service lists when it is complete.¹¹ Future Research Plans should also provide updates on implementation of the community engagement plan as well as use established metrics to quantify the benefits of specific projects and research programs and sub-programs to ESJ communities.

We require that future Research Plans should specifically link research programs and sub-programs to both specific stakeholder input received before and during annual workshops and to equity-related questions listed among top policy selection criteria in the Plans.

In its Tier 2 Advice Letter~~Compliance Filing~~, we require that SoCalGas develop in consultation with Energy Division staff a framework for collecting and reporting ~~include for every research area~~ measures of quantitative impacts of natural gas RD&D projects on disadvantaged and low-income communities including mitigation of greenhouse gas and other particulate emissions as well as anticipated impacts of RD&D on energy costs and reliability on communities. We require that SoCalGas ~~also~~ include such quantitative measures for every research area in all future Plans.

SoCalGas should continue to describe in its 2023 Research Plan specific details about how it is engaging with diverse academic populations at universities and colleges to develop new lab- and bench-scale applied research as well as technology demonstration sites that provide learning opportunities for new researchers especially among first-generation students and students from ESJ populations. Relevant details about engagement with higher education should include specific partnerships with colleges and universities, the number of students involved, the types of research activities involved, new knowledge

¹¹ R.13-02-008, A.19-2-015, R.17-06-015, R.19-01-011, and R.20-01-007.

created, and advances made in grid integration of new technology. SoCalGas should also continue to describe how it is working with ~~CBO~~community-based organizations, including in pre-workshop interviews, to ensure that diverse communities benefit from SoCalGas's RD&D activities.

Alignment of SoCalGas RD&D Plan with California decarbonization goals

As noted in D.19-09-051, the CPUC has set clear guidance about the importance of meeting the state's goals for decarbonizing its energy and transportation systems through building decarbonization and transportation electrification measures. Several stakeholder comments submitted after the workshop also remarked on the value of encouraging the use of renewable hydrogen or renewable natural gas as a building decarbonization-related energy source if appropriate cost and safety concerns are met.

Gas-Powered Appliances

In D.19-09-051, SoCalGas stated that its RD&D program supports projects in five main research domains, including customer end-use applications that develop and commercialize technologies that improve efficiency, reduce environmental impacts of natural gas end-use applications, and support the development and deployment of technologies that meet air emissions and efficiency goals. SoCalGas's 2022 Research Plan includes three sub-programs and two projects that research more efficient gas-powered appliances.

The CPUC is currently evaluating whether offering incentives for gas-powered appliance energy efficiency measures aligns with California's decarbonization goals.¹² As this question is addressed by state regulators and policymakers, SoCalGas should ensure that appliance efficiency projects in future Research Plans align with stated CPUC and state decarbonization policies prior to

¹² See D.18-05-041 and R.13-11-005

undertaking new research.

Completion of SoCalGas RD&D projects contracted prior to the adoption of Resolution G-3573

Resolution G-3573, which approved recording SoCalGas's 2021 Research Plan expenses in the RD&D Expense Account, found that ratepayers should not fund research into transportation technology that is neither scalable nor carbon-free. Accordingly, that resolution denied SoCalGas's ability to recover RD&D funding for two RD&D projects:

- SCAQMD Ford 7.3L Near-Zero Emission Engine Development Project
- Southwest Research Institute (SWRI) Development of Pent-Roof Natural Gas Engine in an Optimized Hybrid Vehicle System Project

In Advice Letter 5824, SoCalGas asks the Commission to revisit its denial of these two RD&D projects and allow SoCalGas to recover funding for these projects. SoCalGas states that Resolution G-3573 interrupted already committed funding for two projects in its Clean Transportation sub-program although SoCalGas does not state that work on the projects stopped. SoCalGas requests that the CPUC allow funding for the following projects be recorded in its RD&D Expense Account until their contractual commitments conclude.

The Commission in reviewing SoCalGas's request for reconsideration used, in part, as its basis whether SoCalGas had sufficient information and guidance at the time from California state policy. In this case, the Commission looked to Governor Gavin Newsom's September 23, 2020, Executive Order N-79-20, which directs the California Air Resources Board to transition the state quickly to zero-emission vehicles. Referencing the Governor's directive¹³, Resolution G-3573 found that SoCalGas's proposal to spend ratepayer funds on research for Near-

¹³ Resolution G-3573 at 20

Zero Emission CNG Engine Development¹⁴ did not meet the state's decarbonization criteria and was disallowed. Instead, the Resolution only allowed SoCalGas to spend ratepayer funds on demonstrations of zero-emission transportation technology.

Below, the Commission addresses SoCalGas's request for each RD&D project.

SCAQMD Ford 7.3L Near-Zero Emission Engine Development Project

SoCal Gas states that the SCAQMD project was contracted in January 2020, with \$300,000 of SoCalGas's RD&D funding spent on the project in 2020; the balance of funding required to complete the project is \$154,325.

While the CPUC continues to support research exclusively into zero-emission vehicles, we recognize that SoCalGas's research projects can last multiple years, with some project funding already contracted and spent before each Research Plan year being considered. It appears that funding for the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project was committed in January 2020 prior to the Governor's Executive Order N-79-20 on zero emission vehicles in September 2020. Further, SoCalGas has spent nearly half of the project's budget, and it would be in the best interest of ratepayers to complete the research as planned. For these reasons, we find that SoCalGas invested in the SCAQMD project prior to the articulation of the state's policy preference for zero emission vehicles, and we agree with SoCalGas that the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project should be completed and that its expenses may be recorded to the RD&D Expense Account.

Southwest Research Institute (SWRI) Development of Pent-Roof Natural Gas Engine in an Optimized Hybrid Vehicle System Project

SoCalGas states that the SWRI project was awarded \$2.525 million from the U.S.

¹⁴ Area 1 of Subp-Program 4.2

Department of Energy's National Renewable Energy Laboratory in 2019 based, in part, on co-funding committed by SoCalGas RD&D. SoCalGas states that it contracted the project in January 2021, several months after the Governor's Executive Order N-79-20 demonstrating a clear preference to transition to zero-emission vehicles in California. SoCalGas states that \$200,000 in funds are still waiting to be committed to complete the project. Based on that timing, we find that SoCalGas had sufficient guidance from the state on its policy preferences for zero-emission vehicles before committing funds to the project. Further, SoCalGas has not yet expended any ratepayer dollars on this project. For those reasons we do not authorize funding for the project to be recorded in the RD&D Expense Account.

In future Plans, SoCalGas should align its RD&D investments with evolving state energy policies. Specifically, transportation projects should be related only to zero-emission vehicle adoption and not further fund any research that does not support zero-emission vehicles.

Summary of Assessment of 2022 Research Plan

The CPUC approves SoCalGas to record \$16.494 million (2022 dollars) in the RD&D Expense Account according to its budget breakdown for RD&D expenses, as described in its 2022 RD&D Program Research Plan. The CPUC approves recording all expenses for the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project to the RD&D Expense Account. The CPUC does not authorize funding for the Southwest Research Institute Development of Pent-Roof Natural Gas Engine in an Optimized Hybrid Vehicle System project to be recorded to the RD&D Expense Account. Any adjustments to the Program budget necessitated for the prior year (over or under) shall be carried over to the following year, with any unspent RD&D funds remaining at the end of the GRC cycle returned in rates to customers as part of the next SoCalGas GRC. The CPUC requires SoCalGas to file a [Tier 2 Advice Letter Compliance Filing](#) within ~~96~~0 days as part of the docket for A.17-10-008 providing [a benefits reporting framework and](#) Research Plan information detailed in the Ordering Paragraphs.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this Resolution must be served on all parties and subject to at least 30 days public review. Any comments are due within 20 days of the date of its mailing and publication on the Commission's website and in accordance with any instructions accompanying the notice. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

SoCalGas was the only party to submit comments on the draft Resolution, filing comments on March 1, 2022~~DATE~~. Energy Division incorporated the following revisions into this Resolution based on SoCalGas's recommendations:

1. SoCalGas will update its 2022 Budget Plan via a Tier 2 advice letter rather than a compliance filing because the proceeding for A.17-10-008-~~XXX~~ is now closed.¹⁵
2. ~~Clarifies that~~ SoCalGas may record expenses for multi-year projects approved and contracted prior to the Resolution ~~may be recorded in the one-way balancing~~ RD&D expense account, consistent with D.19-09-051.~~XXX~~¹⁶
3. It is reasonable for SoCalGas to develop a benefits framework to be

¹⁵ SoCalGas CSCG comments at p. 2.

¹⁶ SoCalGas Comments at 3-4.
SCG comments, p. 3-4

implemented going forward working with Energy Division and stakeholder input given that metrics had not been previously defined and attempting to implement retroactively may face contractual limits.¹⁷

4. It is reasonable to allow SoCalGas 90 days to file its update in a Tier 2 advice letter given time needed to develop a draft benefits framework.¹⁸

5. The Resolution updates terminology to be consistent with SoCalGas's terminology such as use of "Program" and "Sub-Program" rather than "Sub-Area" or "Research Area"; "Project Title" rather than "Project ID"; and "Community Based Organization (CBO)" rather than "organizations dedicated to community building."

FINDINGS

1. SoCalGas filed its 2022 RD&D Program Research Plan, pursuant to D.19-09-051.
2. SoCalGas submitted its 2020 Annual Report to CPUC Energy Division documenting program results from the previous year.
3. SoCalGas organized an annual workshop for stakeholders, provided materials ahead of the workshop, and documented stakeholder engagement, consistent with D.19-09-051.
4. SoCalGas's 2022 Research Plan meets the Advice Letter requirements of D.19-09-051 by providing: 1) Detailed budgets broken down by research sub-program-area; 2) An explanation of how the projects improve reliability, safety, environmental benefits, or operational efficiencies; and 3) Discussion of how SoCalGas incorporated feedback from workshop stakeholders and CPUC Staff, consistent with D.19-09-051.
5. SoCalGas's 2022 Research Plan does not itemize its administration budget in more detailed spending categories as the 2021 Research Plan did.

¹⁷ SoCalGas Comments at 2-3, SCC comments, p. 2-3

¹⁸ SoCalGas Comments at 3, SCC Comments, p. 3

6. SoCalGas's 2022 Research Plan does not specify whether program funds have already been committed or whether they are for projects under development in following years.
7. SoCalGas responded to a CPUC data request about its 2022 Research Plan by sharing project level detail as well as detail about how its research projects supplemented CEC research projects.
8. SoCalGas's 2022 Research Plan does not include consistent quantitative estimates of potential reliability, safety, operational efficiency, affordability, or environmental-related benefits or numeric targets, or a specified numeric range of potential benefits for research programs.
9. SoCalGas's 2022 Research Plan includes a general description of project equity impacts in its criteria and research descriptions.
10. SoCalGas plans to complete a formal RD&D Program Equity Engagement Plan by the end of 2021.
11. SoCalGas's 2022 Research Plan does not include quantitative measures of its RD&D projects' economics impact on communities.
12. SoCalGas's 2022 Research Plan does not list any ~~organizations dedicated to community building~~CBOs among stakeholder organizations that it interviewed in early 2021.
13. SoCalGas's 2022 Research Plan includes three research sub-program-~~areas~~ that are the subject of CPUC proceedings and other deliberations on gas-powered appliance efficiency incentives.
14. Previous to the issuance of the Governor's Executive Order N-79-20, SoCalGas committed and spent funds for the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project.
15. SoCalGas committed funds for the SWRI Development of Pent-Roof Natural Gas Engine in an Optimized Hybrid Vehicle System project in January 2021 following the issuance of Executive Order N-79-20 but has not commenced spending funds on the project.
16. SoCalGas's request to spend 10 percent of its RD&D budget (or \$1.6494 million) on administrative expenses, is reasonable.

~~16.~~

THEREFORE, IT IS ORDERED THAT:

1. SoCalGas is approved to record up to \$16.494 million to the RD&D Expense Account as outlined in Appendix A to this Resolution.
2. SoCalGas's administrative budget of \$1.6494 million is approved.
3. SoCalGas is allowed to record to the Research, Development, and Demonstration Expense Account all funding for the SCAQMD Ford 7.3L Near-Zero Emission Engine Development project.
4. SoCalGas shall submit a Tier 2 Advice Letter ~~Compliance Filing to the docket of A.17-10-008~~ within 960 days with the following information:
 - Provide detail about the 2022 RD&D administrative budget using the same administrative cost categories described in SoCalGas's 2021 Research Plan.
 - Provide detail quantifying research funding allocations by research consortium, as well as project costs connected to each consortium.
 - Develop, in consultation with Energy Division staff, a framework for collecting and reporting sufficient quantitative estimates of potential safety, reliability, operational efficiency, improved affordability, environmental-related benefits (including NOx and GHG emission reductions), ~~or benefits to underserved communities, and or environmental-related benefits or~~ numeric targets, ~~or~~ a specified numeric range of potential benefits for projects. SoCalGas shall provide details of the framework to be considered with the approval of in consultation with Energy Division staff including a scheduled progress update to be provided after the Tier 2 Advice Letter is submitted.
 - Provide detail to Energy Division about the content and completion status of SoCalGas's RD&D Program Equity Engagement Plan if it has not been completed. If it has been completed, SoCalGas shall share the RD&D Program Equity Engagement Plan on relevant service lists related to natural gas and equity.
 - ~~○ Provide quantitative detail, in consultation with Energy Division staff, for each research area in the 2022 Plan detailing the research~~

~~area's past and projected impacts on greenhouse gas and nitrogen oxide emissions and energy cost and reliability.~~

5. In subsequent Research Plans, SoCalGas shall provide the following:
- Describe how SoCalGas is engaging with diverse academic populations at universities and colleges to foster new researchers.
 - Explain how SoCalGas incorporates into its Research Plan feedback received in pre-workshop stakeholder interviews with community based community-based organizations (CBOsS). ~~organizations dedicated to community building.~~
 - Describe, with Energy Division staff guidance, how to ensure energy efficiency RD&D projects for gas-powered appliances align with the State's transportation and building decarbonization goals.
 - Provide detail quantifying the amount of program funds already committed and the quantity of program funds that are for projects under development in following years.
 - Provide project-level detail about Research Plans with the 16 data fields described in the Discussion sub-section titled *Detailed budgets broken down by research sub-program-area.*
 - Provide detail about how research projects supplement and coordinate with similar projects conducted by the CEC and the other IOUs.
 - Provide detail about administrative budgets using allowable cost categories that will be developed in a process launched by D.21-11-028 defining allowable EPIC administrative costs.
 - Develop sufficient quantitative estimates of potential safety, reliability, operational efficiency, improved affordability, and environmental-related benefits or numeric targets, or a specified numeric range of potential benefits for projects.
 - Provide detail quantifying research funding allocations by research consortium, as well as project costs related to each consortium.
 - Provide quantitative detail, in consultation with Energy Division staff, measuring the impact of RD&D projects on disadvantaged and low-income communities in terms of job creation and other economic development impacts and in terms of energy cost,

greenhouse gas emissions, and energy reliability.

- Provide specific rather than general detail in sub-~~program-area~~ equity descriptions about how the research areas benefit underserved communities.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, ~~passed~~passed, and adopted at a conference of the Public Utilities Commission of the State of California held on March 17, 2022; the following Commissioners voting favorably thereon:

RACHEL PETERSON
Executive Director

Appendix A: Approved Budget Breakdown by Program and Administrative Budget Breakdown¹⁹

Program	Total Budget (2021 dollars)	Sub-program	Sub-program budget
Low Carbon Resources	5,492,502	Renewable Gas Production	3,295,501
		Carbon Capture, Utilization and Sequestration	2,197,001
Gas Operations	3,562,704	Environmental & Safety	712,541
		Operations Technology	534,406
		System Design and Materials	1,425,081
		System Inspection & Monitoring	890,676
Clean Transportation	2,078,244	On-Road	623,473
		Off-Road	623,473
		Refueling Stations	415,649
		Onboard Storage	415,649
Clean Generation	1,632,906	Distributed Generation	1,224,680
		Integration & Controls	408,226
Customer End-Use Applications	2,078,244	Commercial Food Service	145,477
		Residential Appliances	665,038
		Commercial	311,737

¹⁹ From AL-5824 "Table 12: RD&D Program Proposed 2022 Funding Allocations by Program and Subprogram" (numbered page 29).

Program	Total Budget (2021 dollars)	Sub-program	Sub-program budget
		Applications	
		Industrial Process Heat	831,298
		Advanced Innovation	124,695
Program Administration			1,649,400
Total	16,494,000		16,494,000